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EXAMINER	
CLAWSON JR., J.	
ART UNIT	**PAPER NUMBER**
256	4

DATE MAILED: 12/01/87

This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), ___ days from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892. ✓
2. ☐ Notice re Patent Drawing, PTO-948.
3. ☒ Notice of Art Cited by Applicant, PTO-1449 ✓
4. ☐ Notice of Informal Patent Application, Form PTO-152
5. ☐ Information on How to Effect Drawing Changes, PTO-1474
6. ☐ _____

Part II SUMMARY OF ACTION

1. ☒ Claims 1-8 are pending in the application.
   Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-8 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.
8. ☐ Allowable subject matter having been indicated, formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. These drawings are ☐ acceptable; ☐ not acceptable (see explanation).
10. ☐ The ☐ proposed drawing correction and/or the ☐ proposed additional or substitute sheet(s) of drawings, filed on _____. has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved. ☐ disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1474.
12. ☒ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified ~~copy has~~ COPIES HAVE ☒ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless-
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.
>
> (g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not

preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 112 that form the basis for the rejections under this section made in this Office action:

2. The specification shall include with one of more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what "a predetermined interval" is or how it may be measured. The claims are thus unclear.

Claims 1, 2, 5, 6 and 8 are rejected under 35 U.S.C. 102 (a) and/or (b) as anticipated by or, in the alternative, under 35 U.S.C. 103 as obvious over Sunami et al. Sunami et al. show, e.g. Figure 7, a "first conductive layer" 8 and a "second conductive layer" 19 connected to access transistor source/drain 15. Sunami et al. also show thick oxide 11, as at Figure 10. The claims are thus felt met by Sunami et al. Any interpretation of the claims in felt at least obvious over Sunami et al. Any element which may not be explicitly recited in Sunami et al. is felt obvious to one of ordinary skill in the art.

Claims 3 and 4, as they can be understood, are rejected under 35 U.S.C. 103 as being unpatentable over

Sunami et al. as applied to claim 1 above, and further in view of Miura et al. Mŭr a et al. show that the capacitor and access transistor can be vertically arranged, with the capacitor well-below the upper source/drain. It would be obvious to one of ordinary skill in the art to use such a vertical arrangement of Miura et al. in Sunami et al. due to the great space reduction in so doing.

Claim 7 is rejected under 35 U.S.C. 103 as being unpatentable over Sunami et al. as applied to claim 1 above, and further in view of Murao. Murao shows that the "first conductive layer" can be a polysilicon layer in the trench and the "second conductive layer" can be a polysilicon layer inside the trench and connected to the source/drain region. It would be obvious to one of ordinary skill in the art to use such dual layering of Murao in Sunami et al. due to the increase in areal capacity as taught by Murao.

Any inquiry concerning this communication should be directed to Examiner Clawson at telephone number 703-557-4822.

wb/11/25/87

Joseph E. Clawson Jr.
JOSEPH E. CLAWSON Jr.
EXAMINER
GROUP ART UNIT 253